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(54) METHOD FOR CONTROLLING COOKING APPLIANCE AND COOKING APPLIANCE

(57) Disclosed are a method for controlling a cooking appliance and a cooking appliance (100). The cooking appliance (100) includes an infrared heating assembly (31) and an electromagnetic heating assembly (32) corresponding to a same heating area. The method for controlling the cooking appliance includes: (S100), obtaining an operating parameter of the infrared heating assembly after an infrared heating mode ends and an electromagnetic heating mode is entered; (S200), obtaining a temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter; and (S300), controlling the electromagnetic heating assembly to operate according to the temperature control parameter. The present application aims to provide a hybrid heating cooking appliance (100) and a method for controlling the hybrid heating cooking appliance (100) to solve the problem that the electromagnetic heating mode of the existing electromagnetic stove cannot operate as required after infrared heating.

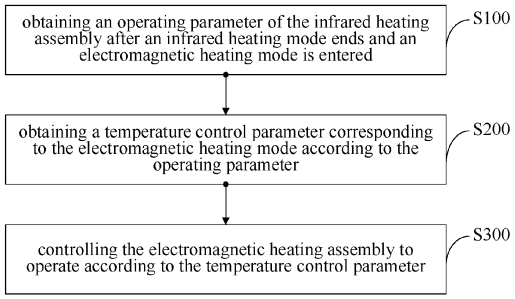

FIG. 1

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Description

TECHNICAL FIELD

[0001] The present application relates to the technical field of cooking appliances, and in particular to a method for controlling a cooking appliance and a cooking appliance.

BACKGROUND

[0002] Existing electromagnetic stoves are generally provided with the temperature control function, that is, a temperature sensor is provided at the electromagnetic stove to sense the temperature at the bottom of the pot or the temperature at the stove panel. When the temperature is higher than the set value, the heating power will be actively reduced until the temperature at the bottom of the pot or the temperature at the stove panel can be maintained at an appropriate and relatively stable state, which can avoid a high temperature of the pot and ensure the cooking degree.

[0003] As for a case of combining an infrared stove pan and an electromagnetic wire pan to form a new hybrid heating cooking appliance, the user may use the electromagnetic heating function after using the infrared heating function. In this case, the maximum temperatures of the infrared stove pan and the stove panel may reach about 600°C, and the temperature of the sensor used to detect the temperature of the bottom of the pot or the stove panel is also high, exceeding the temperature control threshold of a common electromagnetic stove. According to the program settings of a common electromagnetic stove, when the user starts the electromagnetic heating mode of the cooking appliance, since the temperature sensor is in a high temperature state, the cooking appliance will determine that the pot is in a high temperature state and will heat the pot with a low power, or will stop heating, so that the user cannot continue to use the electromagnetic heating function, or until waiting for the temperatures of the infrared stove and the stove panel to drop, the user can restart the electromagnetic heating function. However, it will take a long time to wait the temperature of the infrared stove pan and the stove panel to drop naturally, resulting a long waiting time and a poor practicality.

SUMMARY

[0004] The main purpose of the present application is to provide a method for controlling a cooking appliance and a cooking appliance, aiming to provide a hybrid heating cooking appliance and a method for controlling the hybrid heating cooking appliance to solve the problem that the electromagnetic heating mode of the existing electromagnetic stove cannot operate as required after infrared heating.

[0005] In order to achieve the above objectives, the present application provides a method for controlling a cooking appliance. The cooking appliance includes an infrared heating assembly and an electromagnetic heating assembly corresponding to a same heating area, and the method for controlling the cooking appliance includes:

obtaining an operating parameter of the infrared heating assembly after an infrared heating mode ends and an electromagnetic heating mode is entered;
obtaining a temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter; and
controlling the electromagnetic heating assembly to operate according to the temperature control parameter.

[0006] In an embodiment, the obtaining the temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter includes:

determining whether to adjust a prestored temperature control parameter according to the operating parameter; and
determining the temperature control parameter corresponding to the electromagnetic heating mode according to a determination result.

[0007] In an embodiment, the operating parameter includes a temperature value of the heating area, and the determining whether to adjust the prestored temperature control parameter according to the operating parameter includes:

comparing the temperature value T1 of the heating area with a preset temperature value T0;
in response to that T1 is less than T0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode; and
in response to that T1 is greater than or equal to T0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating

mode.

[0008] T0 is greater than or equal to 100°C.

[0009] In an embodiment, T0 is greater than or equal to 200°C, and is less than or or equal to 600°C.

[0010] In an embodiment, the operating parameter includes an interval time duration from an end of the infrared heating mode to a start of the electromagnetic heating mode, and the determining whether to adjust the prestored temperature control parameter according to the operating parameter includes:

comparing the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode with a preset time duration t0;
in response to that t1 is greater than t0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode; and
in response to that t1 is less than or equal to t0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode.
t0 is less than or equal to 30min.

[0011] In an embodiment, before the obtaining the operating parameter of the infrared heating assembly after the infrared heating mode ends and the electromagnetic heating mode is entered, the method for controlling the cooking appliance further includes:
recording an end time point of the infrared heating mode.

[0012] In an embodiment, t0 is greater than or equal to 5min, and is less than or equal to 20min.

[0013] In an embodiment, the determining the temperature control parameter corresponding to the electromagnetic heating mode according to the determination result includes:

using the adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode according to the determination result; and
the controlling the electromagnetic heating assembly to operate according to the temperature control parameter includes:
comparing a preset operating time duration t3 with an operating time duration t2 of the electromagnetic heating assembly operating with the adjusted temperature control parameter; and
in response to that t2 is greater than or equal to t3, controlling the electromagnetic heating assembly to operate with the prestored temperature control parameter.
t3 is greater than or equal to 5s.

[0014] In an embodiment, t3 is greater than or equal to 3min, and t3 is less than or equal to 5min.

[0015] In an embodiment, the controlling the electromagnetic heating assembly to operate according to the temperature control parameter includes:

obtaining a real-time temperature value T1 of the heating area, and obtaining a preset electromagnetic heating power W corresponding to the real-time temperature value T1 of the temperature control parameter; and
controlling the electromagnetic heating assembly to operate with the electromagnetic heating power W.

[0016] In an embodiment, a temperature determination threshold of the prestored temperature control parameter is increased to form the adjusted temperature control parameter.

[0017] In an embodiment, a difference value between the prestored temperature control parameter and the temperature determination threshold of the adjusted temperature control parameter is T2, and the adjusted temperature control parameter includes:

in response to that T1 is less than or equal to 150°C+T2, the electromagnetic heating power W is a rated power value, and W is greater than 1700W;
in response to that T1 is greater than 150°C+T2 and is less than or equal to 160°C+T2, W is greater than or equal to 1500W and is less than or equal to 1700W;
in response to that T1 is greater than 160°C+T2 and is less than or equal to 170°C+T2, W is greater than or equal to 900W and is less than or equal to 1100W;
in response to that T1 is greater than 170°C+T2 and is less than or equal to 180°C+T2, W is greater than or equal to 400W and is less than or equal to 600W; and
in response to that T1 is greater than 180°C+T2, W is equal to 0.

[0018] A difference value between the prestored temperature control parameter and the temperature determination threshold of the adjusted temperature control parameter is T2, and T2 is greater than or equal to 5°C.

[0019] In an embodiment, T2 is greater than or equal to 20°C and is less than or equal to 100°C.

[0020] In an embodiment, the adjusted temperature control parameter includes a rated power value of the electromagnetic heating assembly.

[0021] The present application further provides a cooking appliance including: a base, a panel, a heating assembly and a control device. The panel covers on the base, and a heating area is provided on the panel. The heating assembly includes an infrared heating assembly and an electromagnetic heating assembly corresponding to a same heating area. The control device is electrically connected to the infrared heating assembly and the electromagnetic heating assembly. The control device includes a memory, a processor, and a program for controlling a cooking appliance, the program for controlling the cooking appliance is stored in the memory and executable on the processor, and the program for controlling the cooking appliance is configured to implement the method for controlling the cooking appliance as mentioned above.

[0022] In the technical solution of the present application, for the cooking appliance provided with both the infrared heating assembly and the electromagnetic heating assembly, when the cooking appliance ends the infrared heating mode and enters the electromagnetic heating mode, in order to avoid a situation that the above-mentioned stove panel or the temperature sensor is in a high temperature state and the normal start of the electromagnetic heating assembly is limited by the conventional temperature control program, the temperature control parameter of the electromagnetic heating mode of the cooking appliance need to be adjusted to obtain the unconventional temperature control parameter corresponding to the high temperature state. Besides, there are cases that the infrared heating function of the cooking appliance is not used and only the electromagnetic heating function of the cooking appliance is used, or that the heating degree of the cooking appliance in the infrared heating mode is relatively gentle, or that there is a relatively long cooling time after the cooking appliance ends the infrared heating mode. Thus, the case of starting the electromagnetic heating mode of the cooking appliance is essentially the same as the case of starting the electromagnetic heating mode of the conventional electromagnetic cooking appliance. In this case, the temperature control parameter of the conventional electromagnetic heating mode needs to be adopted to ensure the cooking degree. Thus, the conventional temperature control parameter of the electromagnetic heating mode need to be retained in the cooking appliance. Based on this, the present application mainly provides a method for controlling the temperature control parameter of the electromagnetic heating mode according to the operating parameter of the infrared heating assembly after the cooking appliance ends the infrared heating mode, so as to meet the temperature control requirements for the electromagnetic heating assembly of the cooking appliance under different usage situations, to meet the cooking requirements of the user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] To illustrate the technical solutions according to the embodiments of the present application more clearly, the accompanying drawings for describing the embodiments are introduced briefly in the following. Apparently, the accompanying drawings in the following description are only some embodiments of the present application. Persons skilled in the art can derive other drawings from the accompanying drawings without creative efforts.

FIG. 1 is a schematic flowchart of a method for controlling a cooking appliance according to a first embodiment of the present application.

FIG. 2 is a schematic flowchart of the method for controlling the cooking appliance according to a second embodiment of the present application.

FIG. 3 is a schematic flowchart of the method for controlling the cooking appliance according to a third embodiment of the present application.

FIG. 4 is a schematic flowchart of the method for controlling the cooking appliance according to a fourth embodiment of the present application.

FIG. 5 is a schematic flowchart of the method for controlling the cooking appliance according to a fifth embodiment of the present application.

FIG. 6 is a schematic flowchart of the method for controlling the cooking appliance according to a sixth embodiment of the present application.

FIG. 7 is a schematic flowchart of the method for controlling the cooking appliance according to a seventh embodiment of the present application.

FIG. 8 is a schematic structural diagram of a control device under a hardware operating environment according to the embodiment in FIG. 1.

FIG. 9 is an exploded schematic view of the cooking appliance according to an embodiment of the present application.

FIG. 10 is a schematic cross-sectional view of part of the structure in FIG. 9.

Description of reference numbers:

[0024]

Reference number	Name	Reference number	Name
100	cooking appliance	31	infrared heating assembly
1	base	32	electromagnetic heating assembly
2	panel	4	control device
21	heating area	5	temperature sensor
3	heating assembly	200	pot

[0025] The realization of the objective, functional characteristics, and advantages of the present application are further described with reference to the accompanying drawings.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0026] The technical solutions of the embodiments of the present application will be described in detail below with reference to the accompanying drawings. It is obvious that the embodiments to be described are only some rather than all of the embodiments of the present application. All other embodiments obtained by persons skilled in the art based on the embodiments of the present application without creative efforts shall fall within the scope of the present application.

[0027] It should be noted that all the directional indications (such as up, down, left, right, front, back...) in the embodiments of the present application are only used to explain the relative positional relationship, movement, or the like of the components in a certain posture (as shown in the accompanying drawings). If the specific posture changes, the directional indication will change accordingly.

[0028] Besides, the descriptions associated with, e.g., "first" and "second," in the present application are merely for descriptive purposes, and cannot be understood as indicating or suggesting relative importance or impliedly indicating the number of the indicated technical feature. Therefore, the feature associated with "first" or "second" can expressly or impliedly include at least one such feature. Moreover, the meaning of "and/or" appearing in the entire text includes three parallel schemes. Taking "A and/or B" as an example, it includes scheme A, or scheme B, or a scheme that satisfies both A and B at the same time. In addition, the technical solutions of the various embodiments can be combined with each other, but the combinations must be based on the realization of Persons skilled in the art. When the combination of technical solutions is contradictory or cannot be achieved, it should be considered that such a combination of technical solutions does not exist, nor does it fall within the scope of the present application.

[0029] Existing electromagnetic stoves are generally provided with the temperature control function, that is, a temperature sensor is provided at the electromagnetic stove to sense the temperature at the bottom of the pot or the temperature at the stove panel. When the temperature is higher than the set value, the heating power will be actively reduced until the temperature at the bottom of the pot or the temperature at the stove panel can be maintained at an appropriate and relatively stable state, which can avoid a high temperature of the pot and ensure the cooking degree.

[0030] As for a case of combining an infrared stove pan and an electromagnetic wire pan to form a new hybrid heating cooking appliance, the user may use the electromagnetic heating function after using the infrared heating function. In this case, the maximum temperatures of the infrared stove pan and the stove panel may reach about 600°C, and the temperature of the sensor used to detect the temperature of the bottom of the pot or the stove panel is also high, exceeding the temperature control threshold of a common electromagnetic stove. According to the program settings of a common electromagnetic stove, when the user starts the electromagnetic heating mode of the cooking appliance, since the temperature sensor is in a high temperature state, the cooking appliance will determine that the pot is in a high temperature state and will heat the pot with a low power, or will stop heating, so that the user cannot continue to use the electromagnetic heating function, or until waiting for the temperatures of the infrared stove and the stove panel to drop, the user can restart the electromagnetic heating function. However, it will take a long time to wait the temperature of the infrared stove pan and the stove panel to drop naturally, resulting a long waiting time and a poor practicality.

[0031] In view of this, the present application provides a method for controlling the cooking appliance. FIG. 1 to FIG. 7 show embodiments of the method for controlling the cooking appliance of the present application. The method for controlling the cooking appliance will be described below with reference to specific drawings.

[0032] As shown in FIG. 1 to FIG. 7, the cooking appliance 100 includes an infrared heating assembly 31 and an electromagnetic heating assembly 32 corresponding to the same heating area 21. The method for controlling the cooking appliance 100 includes the following steps.

S100, obtaining an operating parameter of the infrared heating assembly after an infrared heating mode ends and an electromagnetic heating mode is entered;

S200, obtaining a temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter; and

S300, controlling the electromagnetic heating assembly to operate according to the temperature control parameter.

[0033] In the technical solution of the present application, for the cooking appliance 100 provided with both the infrared heating assembly 31 and the electromagnetic heating assembly 32, when the cooking appliance 100 ends the infrared heating mode and enters the electromagnetic heating mode, in order to avoid a situation that the above-mentioned stove panel 2 or the temperature sensor 5 is in a high temperature state and the normal start of the electromagnetic heating assembly 32 is limited by the conventional temperature control program, the temperature control parameter of the electromagnetic heating mode of the cooking appliance 100 need to be adjusted to obtain the unconventional temperature control parameter corresponding to the high temperature state. Besides, there are cases that the infrared heating function of the cooking appliance 100 is not used and only the electromagnetic heating function of the cooking appliance 100 is used, or that the heating degree of the cooking appliance 100 in the infrared heating mode is relatively gentle, or that there is a relatively long cooling time after the cooking appliance 100 ends the infrared heating mode. Thus, the case of starting the electromagnetic heating mode of the cooking appliance 100 is essentially the same as the case of starting the electromagnetic heating mode of the conventional electromagnetic cooking appliance. In this case, the temperature control parameter of the conventional electromagnetic heating mode needs to be adopted to ensure the cooking degree. Thus, the conventional temperature control parameter of the electromagnetic heating mode need to be retained in the cooking appliance 100. Based on this, the present application mainly provides a method for controlling the temperature control parameter of the electromagnetic heating mode according to the operating parameter of the infrared heating assembly 31 after the cooking appliance 100 ends the infrared heating mode, so as to meet the temperature control requirements for the electromagnetic heating assembly 32 of the cooking appliance 100 under different usage situations, to meet the cooking requirements of the user.

[0034] The main usage situations of the present application include that after the cooking appliance 100 in the infrared heating mode is used to heat a casserole to make soup, the pot 200 needs to replace the casserole and the electromagnetic heating mode of the cooking appliance 100 should be used for quick frying in an iron pan. In this case, when the cooking appliance 100 enters the electromagnetic heating mode, the temperature of the stove panel 2 or the temperature sensor 5 will be too high, and if the conventional temperature control parameter of the electromagnetic cooking appliance 100 are adopted in this case, the electromagnetic heating mode of the cooking appliance 100 will be greatly limited by the conventional temperature control parameter, affecting the normal activation of the electromagnetic heating mode and resulting in inconvenient use. In addition, the present application is also applicable to other situations where the electromagnetic heating mode needs to be adopted immediately after adopting the infrared heating mode, which will not be repeated here.

[0035] In an embodiment, step S200 includes:

S210, determining whether to adjust a prestored temperature control parameter according to the operating parameter; and

S220, determining the temperature control parameter corresponding to the electromagnetic heating mode according to a determination result.

[0036] The temperature control parameter corresponding to the electromagnetic heating mode may be a plurality of sets of prestored temperature control parameters corresponding to different operating parameters of the infrared heating assembly 31, adapting to different usage situations of the electromagnetic heating assembly 32. However, obviously, if a plurality of sets of temperature control parameters are provided, it is necessary to increase the storage space of the control device 4 in the cooking appliance 100. Besides, in the actual application environment of the present application, the control logic of a plurality of sets of temperature control parameters can be the same, and only the numerical values need to be adjusted. Thus, in the present application, only one set of temperature control parameters is prestored, and this set of temperature control parameters can be directly set as the conventional temperature control parameter of the above-mentioned electromagnetic cooking appliance 100, so as to reduce the storage number of control parameters. Moreover, adopting conventional temperature control parameters does not need additional temperature control parameter design of the cooking appliance 100, which may reduce the design cost. Further, according to the preset determination standard, when it is determined that the prestored temperature control parameter of the operating parameter cannot meet the usage requirements, the prestored temperature control parameter can be adjusted through certain adjustment logic, to form the adjusted temperature control parameter corresponding to the obtained operating parameter of the infrared heating assembly 31. In this way, not only the usage requirements of the cooking appliance 100 can be met, but also the design of different temperature control parameters can be simplified and the design cost of the control logic can be further reduced.

[0037] In an embodiment of the method for controlling the cooking appliance 100, the operating parameter includes the temperature value of the heating area 21, and step S210 includes:

S211, comparing the temperature value T1 of the heating area with a preset temperature value T0;

S212, if T1 is less than T0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode; and

S213, if T1 is greater than or equal to T0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode.

[0038] The operating parameter may be the temperature value of the heating area 21. Correspondingly, the determination standard as mentioned above may be whether the real-time temperature value T1 of the heating area 21 reaches the preset temperature value T0. In an embodiment, after the infrared heating mode ends, the temperature value of the heating area 21 detected by the temperature sensor 5 is used as the determination value for selecting the temperature control parameter of the electromagnetic heating mode. When the real-time temperature value T1 of the heating area 21 reaches the preset temperature value T0, the cooking appliance 100 can determine the influence of the residual temperature on the start power in the electromagnetic heating mode after the infrared heating mode ends. That is, when the prestored conventional temperature control parameter are adopted in this case, even if the temperature of the pot 200 is low, since the real-time temperature value of the heating area 21 is high, the cooking appliance 100 will still limit the heating power in the electromagnetic heating mode to affect the heating of the pot 200 in the electromagnetic heating mode, thereby affecting the user experience. Although the heating area 21 is not continuously heated by the cooking appliance 100 in the infrared heating mode and the heating area 21 is in a heat dissipation state, heat dissipation takes time, and the higher the temperature of the heating area 21, the longer the heat dissipation time, which will still affect the start power in the electromagnetic heating mode and affect the usage experience in the electromagnetic heating mode during heat dissipation. In other cases, when the real-time temperature value T1 of the heating area 21 is less than the preset temperature value T0, the cooking appliance 100 can determine that the influence of the residual temperature on the start power in the electromagnetic heating mode after the infrared heating mode ends is within an acceptable range, that is, the influence is small enough or there is even no influence at all. In this case, the actual temperature of the heating area 21 is within an acceptable control range, even if adopting the prestored conventional temperature control parameter will affect the start power in the electromagnetic heating mode, the reduction value of the start power is within an acceptable range, and the cooking appliance 100 can start the electromagnetic heating mode with an acceptable power to heat the pot 200, to meet the requirements for heating the pot 200 in the electromagnetic heating mode. Therefore, the operating parameter are set to the temperature value of the heating area 21, and correspondingly, the determination standard is whether the real-time temperature value T1 of the heating area 21 reaches the preset temperature value T0, which is simple, intuitive, and highly accurate.

[0039] In an embodiment, the preset temperature value T0 is greater than or equal to 100°C. That is, when the electromagnetic heating mode is started and the temperature of the heating area 21 is less than 100°C, it can be determined that the prestored conventional temperature control parameters of the electromagnetic cooking appliance 100 do not limit the heating power of the electromagnetic heating assembly 32, that is, the prestored conventional temperature control parameters of the electromagnetic cooking appliance 100 does not affect the electromagnetic heating assembly 32 to start normally. In this case, the prestored conventional temperature control parameters are used as the temperature control parameter of the electromagnetic heating mode, which will not affect the start power of the electromagnetic heating assembly 32. Thus, the preset temperature value T0 is greater than or equal to 100°C, which can avoid adjusting the prestored temperature control parameter when the temperature of the heating area 21 is lower than 100°C, thereby avoiding the invalid adjustment for the prestored temperature control parameter, reducing invalid control steps, and reducing the possibility of abnormal control logic. The specific preset temperature value T0 is selected based on the user acceptance degree of the power reduction extent when the electromagnetic heating assembly 32 is started. The higher the selected value, when the real-time temperature T1 of the heating area 21 is lower than the selected value and the prestored conventional temperature control parameter is adopted, the greater the reduction of the start power of the electromagnetic heating assembly 32, and vice versa, the smaller the reduction, which is not limited here. Furthermore, in this embodiment, the preset temperature value T0 is greater than or equal to 200°C, that is, when the temperature of the heating area 21 ranges form 100°C to 200°C, the temperature control parameter of the electromagnetic heating mode is the prestored conventional temperature control parameter, even if there is a limit on the power of the electromagnetic heating assembly 32, the limit is small and can basically be ignored. Based on the same reason mentioned above that the preset temperature value T0 is less than 100°C, the prestored temperature control parameters are not adjusted, to reduce control steps and simplify the control process. In this embodiment, the maximum of the preset temperature value T0 is 600°C. It can be understood that the infrared heating assembly 31 can be heated to a maximum temperature of about 600°C. If the preset temperature value T0 is set to be greater than 600°C, it means that the real-time temperature T1 of the heating area 21 cannot reach the preset temperature value T0, so that the cooking appliance 100 in the electromagnetic heating mode will

always operate with the prestored temperature control parameters, and the technical solution in the present application cannot be implemented and has no actual control significance. Therefore, in this embodiment, the preset temperature value T0 ranges form 200°C to 600°C, and the specific value is selected based on the user acceptance degree of the power reduction extent when the electromagnetic heating assembly is started, which will not be limited here. In particular, based on the above-mentioned user acceptance degree of the power reduction extent when the electromagnetic heating assembly is started, a plurality of ranges can actually be set to correspond to a plurality of preset temperature values T0, thereby adapting different user requirements.

[0040] Furthermore, in another embodiment of the method for controlling the cooking appliance 100, step S210 includes:

S214, comparing the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode with a preset time duration t0;

S215, if t1 is greater than t0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode; and

S216, if t1 is less than or equal to t0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode.

[0041] Different from the above-mentioned embodiment of the method for controlling the cooking appliance 100, in which the temperature value of the heating area 21 is used for determination, in this embodiment, the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating assembly 32 is mainly used as a determination basis, that is, the idle time of the cooking appliance 100 is used as the determination basis, or the heat dissipation time of the cooking appliance 100 after the infrared heating mode ends is used as the determination basis. Compared with intuitive determination based on the temperature value of the heating area 21, it can be understood that the solution in this embodiment indirectly reflects the temperature of the heating area 21 after the infrared heating mode ends, and the determination accuracy of the condition of the heating area 21 may be poor. It is also possible to summarize and refine the specific value of the preset time duration t0 through a plurality of data experiments in the research and development stage, to improve the accuracy as much as possible. In an embodiment, the heating area 21 can be heated to the highest temperature by adopting the rated heating power in the infrared heating mode, then the infrared heating assembly 31 is shut down to obtain the longest heat dissipation time for the heating area 21 to cool down to the preset temperature, and the longest heat dissipation time can be used as the preset time duration t0. The preset temperature is the maximum temperature corresponding to the power reduction degree that can be accepted by the user when the electromagnetic heating assembly 32 operates with the prestored conventional temperature control parameters. In this case, if the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode is greater than the preset time duration t0, the temperature of the heating area 21 is lower than the preset temperature, and the prestored conventional temperature control parameter can be adopted, which can be accepted by the user. Conversely, if the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode is not greater than the preset time duration t0, the minimum temperature of the heating area 21 is the preset temperature and is most likely to exceed the preset temperature. In this case, the prestored temperature control parameter need to be adjusted to avoid an excessive influence on the start power of the electromagnetic heating assembly 32 which will not be accepted by users and can avoid affecting the user experience. Of course, it can be understood that there can be many test process methods for obtaining the preset time duration t0 through test data, the above embodiment is only one of the implementation methods and is not used as a limitation here, and the test process method for obtaining the preset time duration t0 should be based on the actual product development process and the user requirement. Therefore, the solution that the interval time duration from the end of the infrared heating mode to the start of the electromagnetic heating mode is mainly used as a basis for determining whether to adjust the prestored temperature control parameter. Compared with intuitive determination based on the temperature value of the heating area 21, although the determination accuracy of this solution is poorer, the accuracy based on the test data can also meet the usage requirements of the cooking appliance 100 in the present application, and this solution can be used as another embodiment of the method for controlling the cooking appliance 100.

[0042] In an embodiment, before step S 100, the method for controlling the cooking appliance 100 further includes following steps.

[0043] S 110, recording an end time point of the infrared heating mode.

[0044] In order to be applicable to the above-mentioned control method for determining whether to adjust the prestored temperature control parameter through the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode, the end time point needs to be recorded when the infrared heating mode ends, so as to obtain the start time point of the electromagnetic heating mode when the electromagnetic heating mode is started. Then the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode can be calculated and obtained based on the above two time points to meet the usage requirements. Of course, a timer can be

provided in the cooking appliance 100. After the infrared heating mode ends, the timer is started until the electromagnetic heating mode is started. The time recorded by the timer is used to obtain the time from the end of the infrared heating mode to the start of the electromagnetic heating mode. However, it should be understood that obtaining the time by recording time points can avoid the situation that the electromagnetic heating mode is no longer started after the infrared heating mode ends. If a timer is used to record the time, additional timing upper limit should be set in the above situation to avoid invalid records for a long time. In an embodiment, the time can be obtained through one of the above two methods or through other ways, as long as the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode can be obtained, which is not limited here.

[0045] In an embodiment, t0 is less than or equal to 30min. Similar to the solution of determining whether to adjust the prestored temperature control parameter based on the temperature of the heating area 21, when the heating area 21 cools down for 30 minutes, the temperature of the heating area 21 has dropped to the extent that does not limit the start power of the electromagnetic heating assembly 32 with the conventional temperature control parameters, and there is no need to adjust the prestored temperature control parameter. If t0 is set to be greater than 30min, there will be invalid adjustment. Therefore, in the present application, the preset time duration t0 is not greater than 30min. Further, when the cooling time of the heating area 21 ranges form 20min to 30min, there may be a certain lingering warmth, but the limit of the prestored conventional temperature control parameter corresponding to the lingering warmth to the power of the electromagnetic heating assembly 32 is poor, that is, the limit of the prestored conventional temperature control parameter corresponding to the lingering warmth to the power of the electromagnetic heating assembly 32 can be accepted by the user. In this case, in order to reduce the adjustment of prestored temperature control parameters and reduce the control process, the preset time duration t0 of the present application is not greater than 20min. In addition, for the case when the cooling time of the heating area 21 is less than 5min, the reduction of the temperature value of the heating area 21 is small. On the basis that the heating area 21 is heated to the maximum heating temperature in the infrared heating mode and has cooled down for a maximum time of 5 min, the temperature of the heating area 21 greatly reduces the start power of the electromagnetic heating assembly 32 with the prestored conventional temperature control parameter, which affects the use experience of the cooking appliance 100. Therefore, in the present application, the preset time duration t0 is greater than or equal to 5min, to avoid the situation that the power of the electromagnetic heating assembly 32 is seriously reduced or even the electromagnetic heating assembly 32 cannot be started normally when the cooking appliance 100 determines that there is no need to adjust the prestored temperature control parameter.

[0046] It should be noted that the usage situations of the cooking appliance 100 may also include a situation that the infrared heating mode is not turned off after being started, and then the electromagnetic heating mode is started. In this case, in order to ensure the normal operation of the electromagnetic heating mode, the temperature control program of the electromagnetic heating mode can be turned off directly to avoid affecting the power in the electromagnetic heating mode and ensure the user experience. If the temperature control program of the electromagnetic heating mode is not limited, the heating temperature may be too high and not suitable for cooking. In this case, the maximum temperature value of the heating area 21 should not exceed the maximum temperature value that can be heated in infrared heating mode. Generally, the maximum temperature value can be set to 600°C to ensure that the overall temperature of the pot 200 does not exceed 600°C and ensure that the temperature of the pot 200 is controllable.

[0047] In addition, step S220 includes following steps.

[0048] S221, using the adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode according to the determination result.

[0049] Correspondingly, the step S300 includes following steps.

[0050] S310, comparing the preset operating time duration t3 with an operating time duration t2 of the electromagnetic heating assembly operating with the adjusted temperature control parameter; and

S320, if t2 is greater than or equal to t3, controlling the electromagnetic heating assembly to operate with the prestored temperature control parameter.

[0051] After determining that it is necessary to adjust the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode to meet the user requirements and avoid affecting the user experience, the electromagnetic heating assembly 32 is started with the adjusted prestored parameter. In this case, the limit to the power of the electromagnetic heating assembly 32 is small or even limit does not occur. As the electromagnetic heating assembly 32 heats the pot 200 and the heat of the heating area 21 dissipates, the temperature of the heating area 21 tends to be the same as the temperature of the pot 200, and may exceed the maximum temperature set by the prestored temperature control parameter, that is, the temperature of the heating area 21 may exceed the optimal cooking temperature of the pot 200. In this case, in order to maintain and ensure the temperature of the pot 200, it is necessary to adjust the temperature control parameter of the electromagnetic heating mode back to the preset conventional temperature control parameter. Adjusting the temperature control parameter of the electromagnetic heating mode back to the preset conventional temperature control parameter through detecting the temperature of the pot 200 is the most accurate way. However, the cooking appliance 100 generally detect the temperature of the heating area 21, and in this case, the temperature of the heating area 21 is not always the same as the temperature of the pot 200, which is uncertain.

Therefore, in the present application, the operation time of the electromagnetic heating assembly 32 with the adjusted temperature control parameters is used as a basis for determining whether to adjust the temperature control parameter back to the preset conventional temperature control parameter. Supported by the test data, a more accurate preset time duration t3 for heating the pot 200 to the optimal temperature can be summarized to make a more accurate determination on whether to adjust the temperature control parameter of the electromagnetic heating mode, thereby meeting usage requirements.

[0052] In an embodiment, t3 is greater than or equal to 5s. The preset time duration t3 is set to be greater than or equal to 5s to avoid frequent adjustments to the temperature control parameter of the electromagnetic heating mode in a short period of time, thereby avoiding failure of the control system of the cooking appliance 100. Further, t3 is greater than or equal to 3min, and t3 is less than or equal to 5min. In order to ensure that the cooking appliance 100 in the electromagnetic heating mode heats the pot 200 to the required cooking temperature, the preset time duration t3 in the present application should be not less than 3min. In addition, in order to avoid heating the pot 200 to an excessively high temperature, the preset time duration t3 is not more than 5min. This data is obtained based on the electromagnetic heating assembly 32 heating the pot 200 at the rated power. The time required to heat the pot 200 at room temperature to the minimum required cooking temperature and the maximum temperature limit is used as the range of the preset time duration t3. The specific time is not limited and is based on actual requirements. Of course, the time can also be obtained through other methods, as long as that the temperature of the pot 200 is ensured to be below the optimal temperature, which is not limited here, to prevent excessive temperature from affecting the cooking effect.

[0053] In addition, step S300 includes following steps.

[0054] S330, obtaining a real-time temperature value T1 of the heating area, and obtaining a preset electromagnetic heating power W corresponding to the real-time temperature value T1 of the temperature control parameter; and

S340, controlling the electromagnetic heating assembly to operate with electromagnetic heating power W.

[0055] The temperature control parameter is the corresponding relationship between the temperature value of the heating area 21 and the heating power of the electromagnetic heating assembly 32. The conventional setting is that the higher the temperature value, the greater the limitaion on the heating power until the electromagnetic heating assembly 32 is turned off. In the present application, the prestored conventional temperature parameter is selected in the following situations. If the real-time temperature value T1 is less than or equal to 150°C, the electromagnetic heating power W is a rated power value, and W is greater than 1700W. If T1 is greater than 150°C and is less than or equal to 160°C, W is greater than or equal to 1500W and is less than or equal to 1700W. If T1 is greater than 160°C and is less than or equal to 170°C, W is greater than or equal to 900W and is less than or equal to 1100W. If T1 is greater than 170°C and is less than or equal to 180°C, W is greater than or equal to 400W and is less than or equal to 600W. If T1 is greater than 180°C, W is equal to 0. In this way, not only the temperature value of the pot 200 is controlled at a maximum of 180°C to meet the cooking requirements, and the excessive temperature can be prevented from affecting the cooking effect.

[0056] In an embodiment, the temperature determination threshold of the prestored temperature control parameter is increased to form the adjusted temperature control parameter. The method of adjusting the temperature control parameter may be to synchronously adjust the thresholds of the temperature value ranges of the above-mentioned conventional temperature control parameters, or to expand each temperature value range to cover the maximum heating temperature of the infrared heating mode, or to directly remove the temperature control parameter to cancel the control of the heating temperature, so that the electromagnetic heating assembly 32 can heat with the rated power value, thereby reducing the influence on the heating power of the electromagnetic heating assembly 32, which is not limited here.

[0057] In an embodiment of the present application, the temperature determination threshold of the prestored temperature control parameter is increased to form the adjusted temperature control parameter. The difference between the temperature determination thresholds of the prestored temperature control parameter and the adjusted temperature control parameter is T2. The prestored conventional temperature control parameter is selected in the following situations. If the real-time temperature value T1 is less than or equal to 150°C + T2, the electromagnetic heating power W is a rated power value, and W is greater than 1700W. If T1 is greater than 150°C + T2 and is less than or equal to 160°C + T2, W is greater than or equal to 1500W and is less than or equal to 1700W. If T1 is greater than 160°C + T2 and is less than or equal to 170°C + T2, W is greater than or equal to 900W and is less than or equal to 1100W. If T1 is greater than 170°C + T2 and is less than or equal to 180°C + T2, W is greater than or equal to 400W and is less than or equal to 600W. If T1 is greater than 180°C + T2, W is equal to 0. In this way, it is equivalent to use the initial temperature of the heating area 21 as the basic temperature value to eliminate the temperature increase value of the heating area 21 heated in the infrared heating mode based on the prestored conventional temperature control parameter. The basic control logic and the temperature control range have not changed, so as to facilitate switching between prestored temperature control parameter and adjusted temperature control parameter, thereby reducing the control design difficulty.

[0058] In an embodiment, the difference value between the temperature determination thresholds of the prestored temperature control parameter and the adjusted temperature control parameter is T2, and T2 is greater than or equal to 5°C. When the difference between the above determination thresholds is less than 5°C, based on the inherent temperature error of the temperature sensor 5, it is impossible to distinguish between the prestored temperature control parameter and

the adjusted temperature control parameter during actual use, that is, the practicality is poor. In an embodiment, the difference value T2 of the present application is greater than or equal to 5°C. Further, T2 is greater than or equal to 20°C and is less than or equal to 100°C to meet the usage requirements.

[0059] As shown in FIG. 8 to FIG. 10, the present application further provides a cooking appliance 100. The cooking appliance 100 includes a base 1, a panel 2, a heating assembly 3 and a control device 4. The panel 2 is covered on the base 1, and the panel 2 is provided with a heating area 21. The heating assembly 3 includes an infrared heating assembly 31 and an electromagnetic heating assembly 32 corresponding to the same heating area 21. The control device 4 is electrically connected to the infrared heating assembly 31 and the electromagnetic heating assembly 32.

[0060] In an embodiment, to implement the above-mentioned method for controlling the cooking appliance 100, as shown in FIG. 8, the control device 4 includes a processor 1001, such as a CPU, a communication bus 1002, a user interface 1003, a network interface 1004, and a memory 1005. The communication bus 1002 is used to realize connection communication between these components. The user interface 1003 may include a display screen and an input unit such as a keyboard. The user interface 1003 may also include a standard wired interface and a wireless interface. The network interface 1004 may include a standard wired interface or a wireless interface (such as a WI-FI interface). The memory 1005 may be a high-speed RAM memory or a non-volatile memory, such as a disk memory. The memory 1005 may be a storage device independent of the aforementioned processor 1001.

[0061] Persons skilled in the art can understand that the structure of the control device 4 shown in FIG. 8 does not constitute a limitation on the control device 4, and may include more or less components than shown in the accompany drawings, or combine some components, or arrange different components.

[0062] As shown in FIG. 8, the memory 1005 as a computer storage medium may include an operating system, a network communication module, a user interface module, and a program for controlling the cooking appliance 100.

[0063] In the control device 4 shown in FIG. 8, the processor 1001 calls the program for controlling the cooking appliance 100 stored in the memory 1005 and executes the method for controlling the cooking appliance 100.

[0064] The above are only some embodiments of the present application, and do not limit the scope of the present application thereto. Under the concept of the present application, any equivalent structural transformation made according to the description and drawings of the present application, or direct/indirect application in other related technical fields shall fall within the claimed scope of the present application.

Claims

1. A method for controlling a cooking appliance, **characterized in that**, the cooking appliance comprises an infrared heating assembly and an electromagnetic heating assembly corresponding to a same heating area, and the method for controlling the cooking appliance comprises:

   (S100) obtaining an operating parameter of the infrared heating assembly after an infrared heating mode ends and an electromagnetic heating mode is entered;
   (S200) obtaining a temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter; and
   (S300) controlling the electromagnetic heating assembly to operate according to the temperature control parameter.

2. The method for controlling the cooking appliance according to claim 1, wherein the (S200) obtaining the temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter comprises:

   (S210) determining whether to adjust a prestored temperature control parameter according to the operating parameter; and
   (S220) determining the temperature control parameter corresponding to the electromagnetic heating mode according to a determination result.

3. The method for controlling the cooking appliance according to claim 2, wherein the operating parameter comprises a temperature value of the heating area, and the (S210) determining whether to adjust the prestored temperature control parameter according to the operating parameter comprises:

   (S211) comparing the temperature value T1 of the heating area with a preset temperature value T0;
   (S212) in response to that T1 is less than T0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode; and

(S213) in response to that T1 is greater than or equal to T0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode,
wherein T0 is preferably greater than or equal to 100°C.

4. The method for controlling the cooking appliance according to claim 3, wherein T0 is greater than or equal to 200°C, and is less than or or equal to 600°C.

5. The method for controlling the cooking appliance according to claim 2, wherein the operating parameter comprises an interval time duration from an end of the infrared heating mode to a start of the electromagnetic heating mode, and the (S210) determining whether to adjust the prestored temperature control parameter according to the operating parameter comprises:

(S214) comparing the interval time duration t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode with a preset time duration t0;
(S215) in response to that t1 is greater than t0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode; and
(S216) in response to that t1 is less than or equal to t0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode,
wherein t0 is preferably less than or equal to 30min.

6. The method for controlling the cooking appliance according to claim 5, wherein before the (S100),obtaining the operating parameter of the infrared heating assembly after the infrared heating mode ends and the electromagnetic heating mode is entered, the method for controlling the cooking appliance further comprises:
(S110) recording an end time point of the infrared heating mode.

7. The method for controlling the cooking appliance according to claim 5, wherein t0 is greater than or equal to 5min, and is less than or equal to 20min.

8. The method for controlling the cooking appliance according to any one of claims 2 to 7, wherein:

the (S220) determining the temperature control parameter corresponding to the electromagnetic heating mode according to the determination result comprises:

(S221) using the adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode according to the determination result; and/or
the (S300) controlling the electromagnetic heating assembly to operate according to the temperature control parameter comprises:

(S310) comparing a preset operating time duration t3 with an operating time duration t2 of the electromagnetic heating assembly operating with the adjusted temperature control parameter; and
(S320) in response to that t2 is greater than or equal to t3, controlling the electromagnetic heating assembly to operate with the prestored temperature control parameter,
wherein t3 is preferably greater than or equal to 5s.

9. The method for controlling the cooking appliance according to claim 8, wherein t3 is greater than or equal to 3min, and t3 is less than or equal to 5min.

10. The method for controlling the cooking appliance according to any one of claims 2 to 7, wherein the (S300) controlling the electromagnetic heating assembly to operate according to the temperature control parameter comprises:

(S330) obtaining a real-time temperature value T1 of the heating area, and obtaining a preset electromagnetic heating power W corresponding to the real-time temperature value T1 of the temperature control parameter; and
(S340) controlling the electromagnetic heating assembly to operate with the electromagnetic heating power W.

11. The method for controlling the cooking appliance according to claim 10, wherein a temperature determination threshold of the prestored temperature control parameter is increased to form the adjusted temperature control

parameter.

12. The method for controlling the cooking appliance according to claim 11, wherein a difference value between the prestored temperature control parameter and the temperature determination threshold of the adjusted temperature control parameter is T2, and the adjusted temperature control parameter comprises:

in response to that T1 is less than or equal to 150°C+T2, the electromagnetic heating power W is a rated power value, and W is greater than 1700W;
in response to that T1 is greater than 150°C+T2 and is less than or equal to 160°C+T2, W is greater than or equal to 1500W and is less than or equal to 1700W;
in response to that T1 is greater than 160°C+T2 and is less than or equal to 170°C+T2, W is greater than or equal to 900W and is less than or equal to 1100W;
in response to that T1 is greater than 170°C+T2 and is less than or equal to 180°C+T2, W is greater than or equal to 400W and is less than or equal to 600W; and
in response to that T1 is greater than 180°C+T2, W is equal to 0;
and/or,
wherein a difference value between the prestored temperature control parameter and the temperature determination threshold of the adjusted temperature control parameter is T2, and T2 is greater than or equal to 5°C.

13. The method for controlling the cooking appliance according to claim 12, wherein T2 is greater than or equal to 20°C and is less than or equal to 100°C.

14. The method for controlling the cooking appliance according to any one of claims 2 to 7, wherein the adjusted temperature control parameter comprises a rated power value of the electromagnetic heating assembly.

15. A cooking appliance (100), **characterized by** comprising:

a base (1);
a panel (2) covering on the base, wherein a heating area (21) is provided on the panel;
a heating assembly (3) comprising an infrared heating assembly (31) and an electromagnetic heating assembly (32) corresponding to a same heating area; and
a control device (4) electrically connected to the infrared heating assembly (31) and the electromagnetic heating assembly (32), wherein the control device (4) comprises a memory (1005), a processor (1001), and a program for controlling a cooking appliance, the program for controlling the cooking appliance is stored in the memory (1005) and executable on the processor (1001), and the program for controlling the cooking appliance is configured to implement a method for controlling the cooking appliance according to any one of claims 1 to 14.

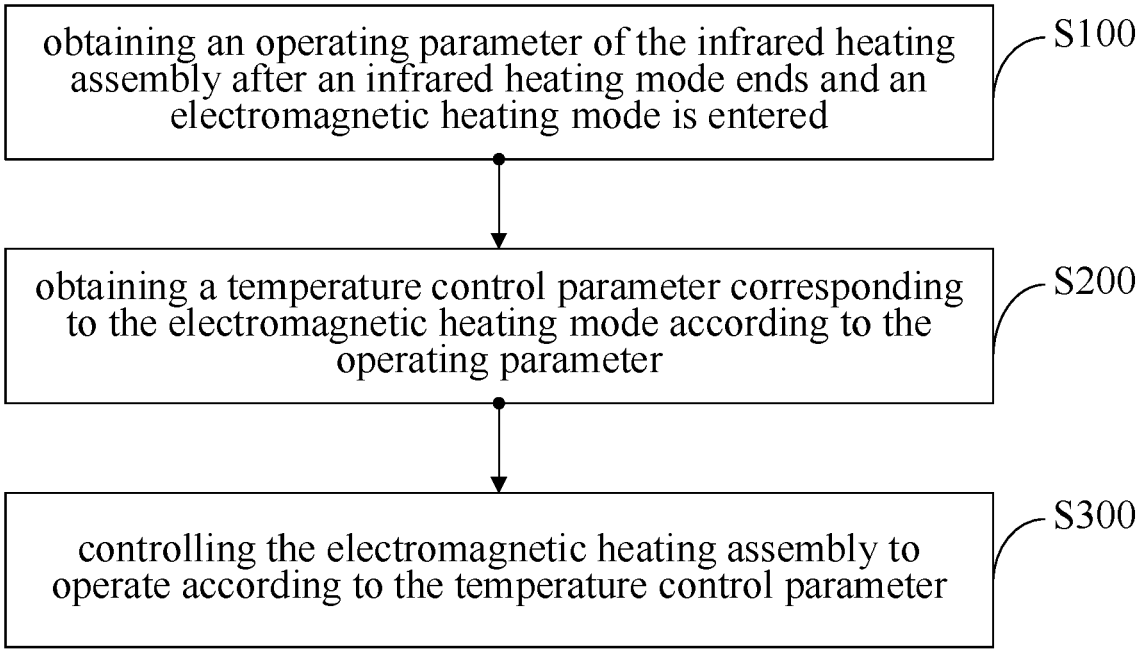
obtaining an operating parameter of the infrared heating assembly after an infrared heating mode ends and an electromagnetic heating mode is entered
S100
obtaining a temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter
S200
controlling the electromagnetic heating assembly to operate according to the temperature control parameter
S300

FIG. 1

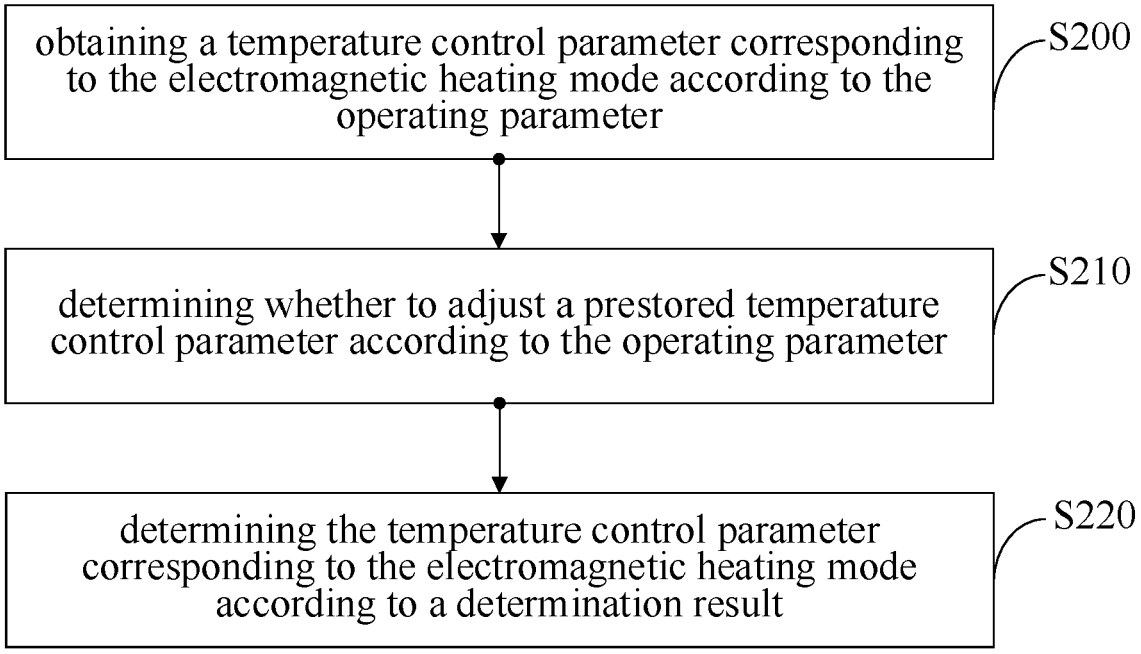
obtaining a temperature control parameter corresponding to the electromagnetic heating mode according to the operating parameter
S200
determining whether to adjust a prestored temperature control parameter according to the operating parameter
S210
determining the temperature control parameter corresponding to the electromagnetic heating mode according to a determination result
S220

FIG. 2

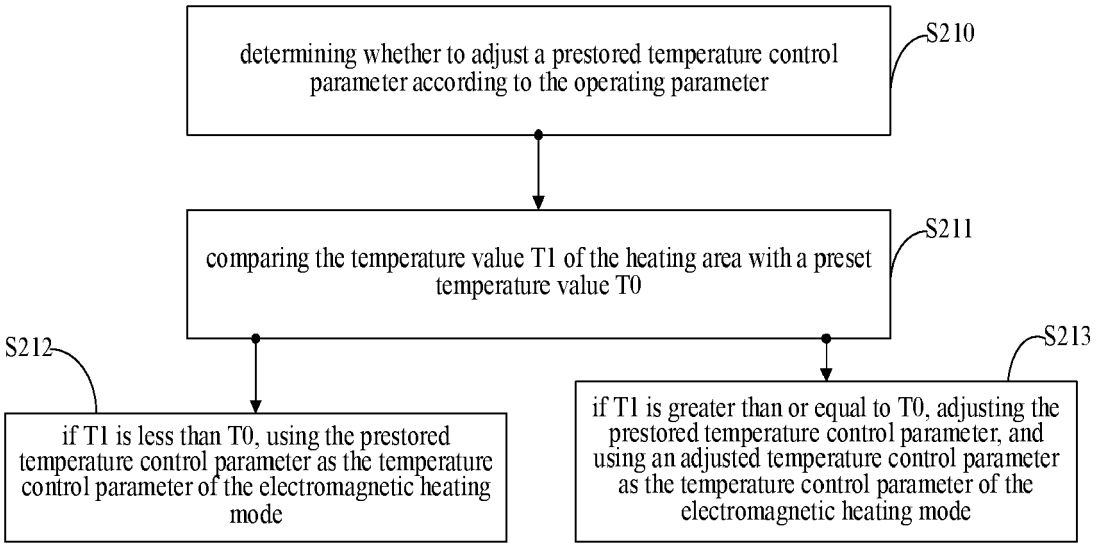
determining whether to adjust a prestored temperature control parameter according to the operating parameter
S210
comparing the temperature value T1 of the heating area with a preset temperature value T0
S211
S212
if T1 is less than T0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode
S213
if T1 is greater than or equal to T0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode

FIG. 3

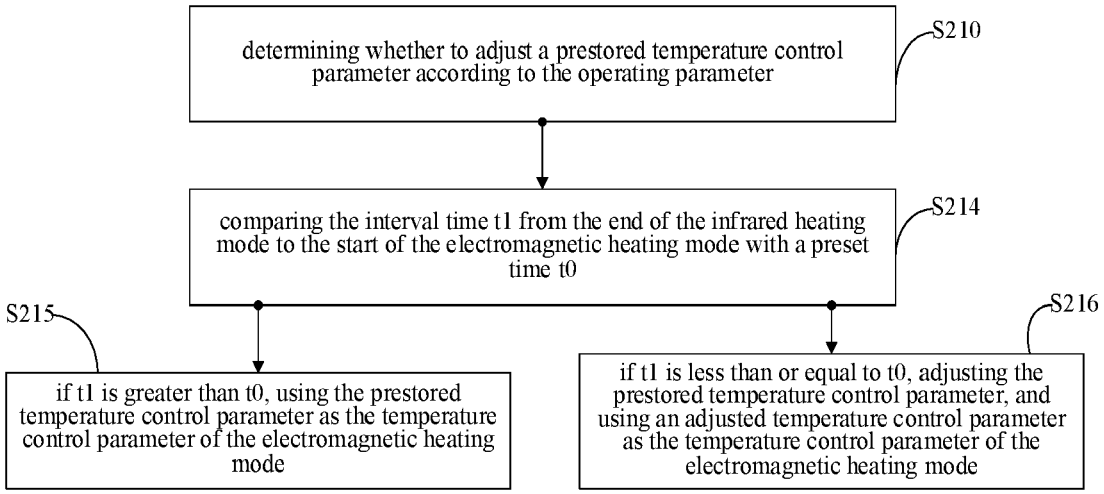
determining whether to adjust a prestored temperature control parameter according to the operating parameter
S210
comparing the interval time t1 from the end of the infrared heating mode to the start of the electromagnetic heating mode with a preset time t0
S214
S215
if t1 is greater than t0, using the prestored temperature control parameter as the temperature control parameter of the electromagnetic heating mode
S216
if t1 is less than or equal to t0, adjusting the prestored temperature control parameter, and using an adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode

FIG. 4

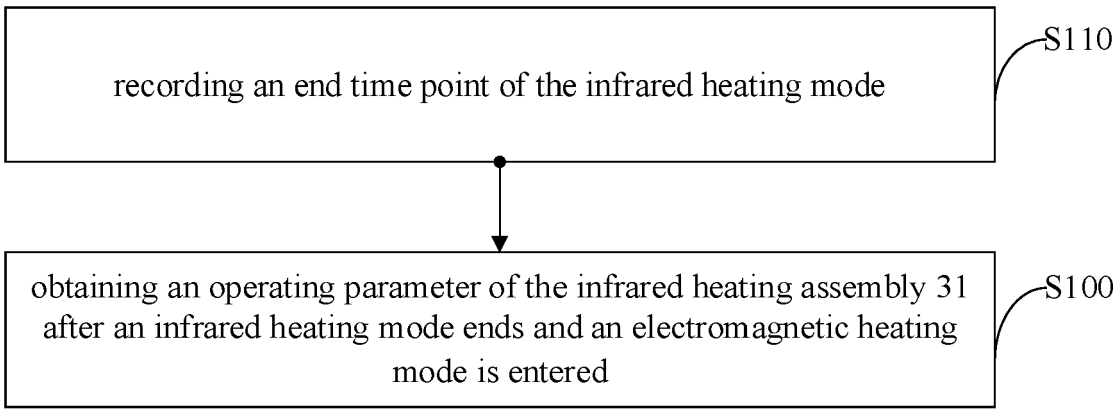
recording an end time point of the infrared heating mode
S110
obtaining an operating parameter of the infrared heating assembly 31 after an infrared heating mode ends and an electromagnetic heating mode is entered
S100

FIG. 5

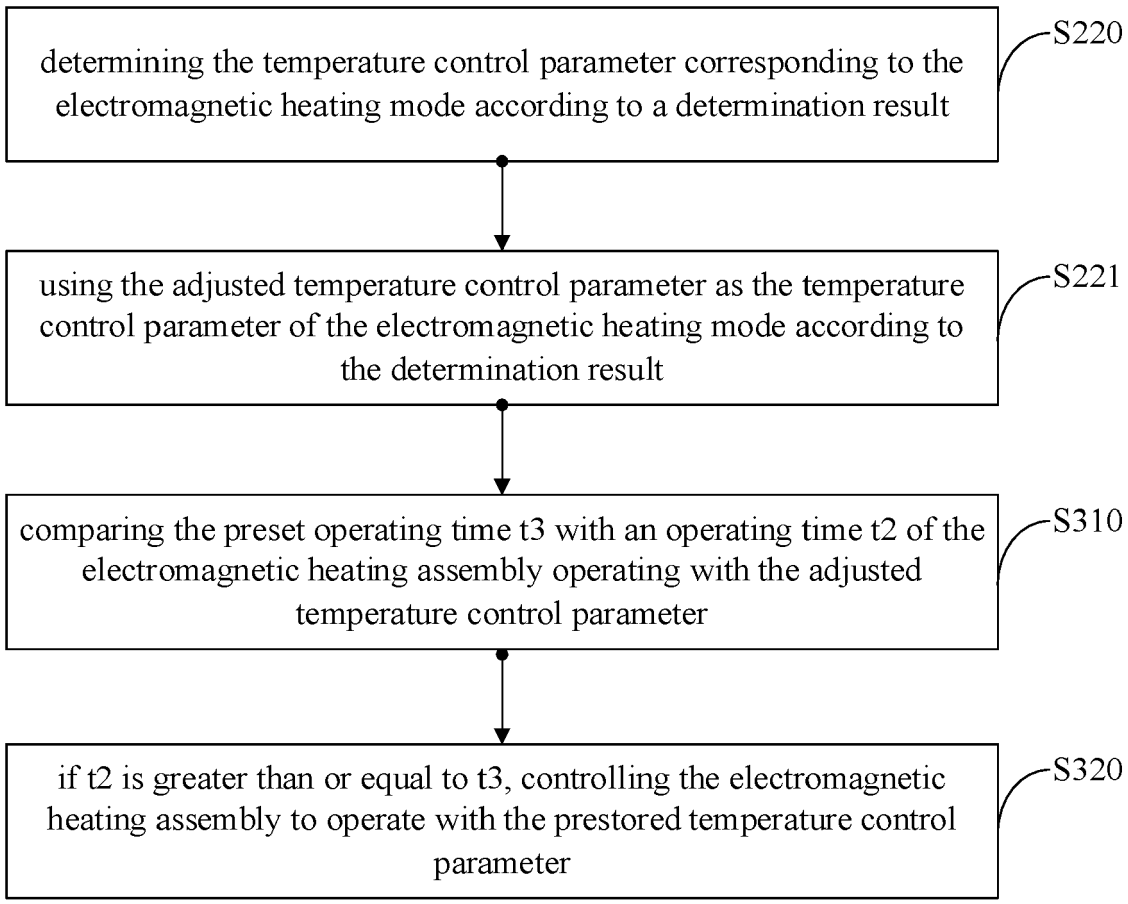
determining the temperature control parameter corresponding to the electromagnetic heating mode according to a determination result
S220
using the adjusted temperature control parameter as the temperature control parameter of the electromagnetic heating mode according to the determination result
S221
comparing the preset operating time t3 with an operating time t2 of the electromagnetic heating assembly operating with the adjusted temperature control parameter
S310
if t2 is greater than or equal to t3, controlling the electromagnetic heating assembly to operate with the prestored temperature control parameter
S320

FIG. 6

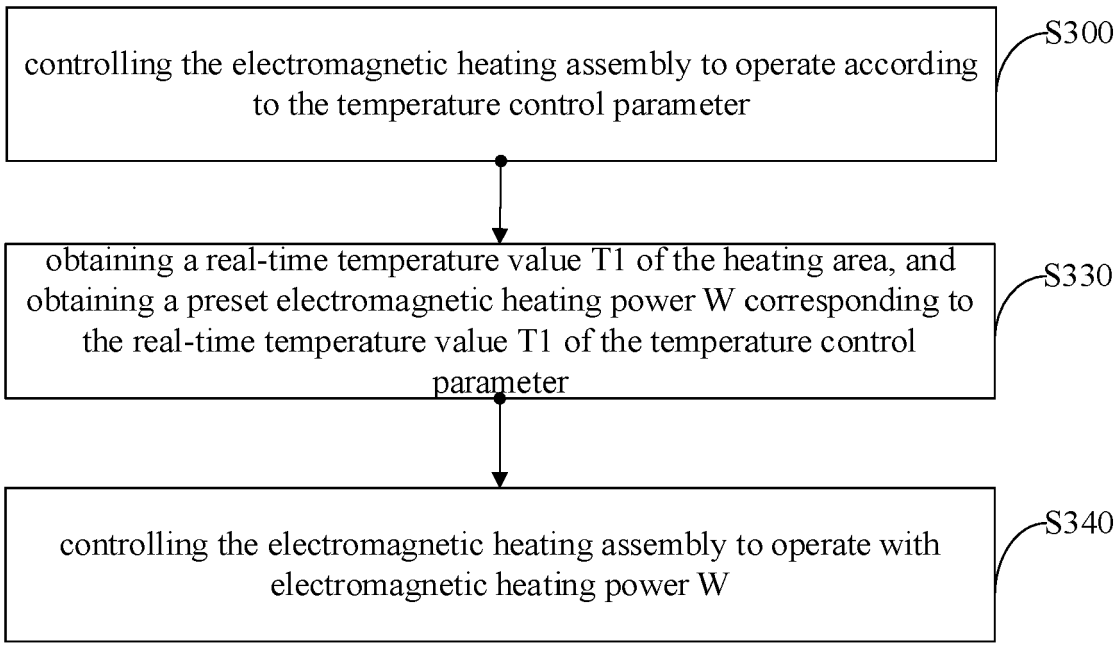
controlling the electromagnetic heating assembly to operate according to the temperature control parameter
S300
obtaining a real-time temperature value T1 of the heating area, and obtaining a preset electromagnetic heating power W corresponding to the real-time temperature value T1 of the temperature control parameter
S330
controlling the electromagnetic heating assembly to operate with electromagnetic heating power W
S340

FIG. 7

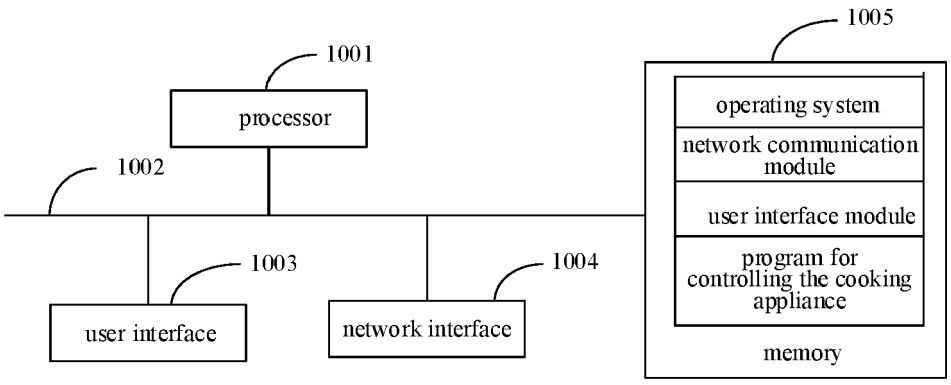
1005
1001
processor
operating system
network communication module
user interface module
program for controlling the cooking appliance
1002
1003
1004
user interface
network interface
memory

FIG. 8

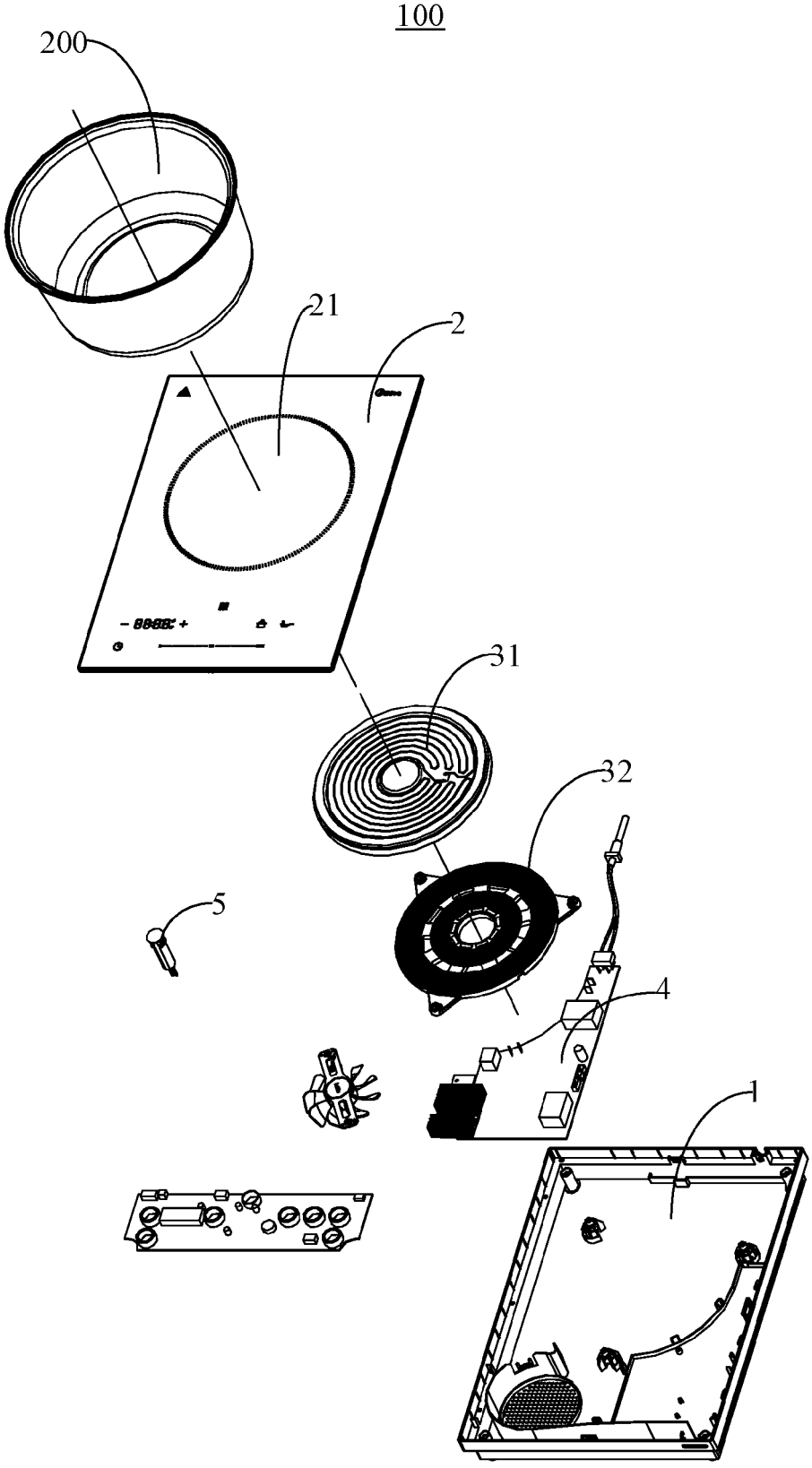

FIG. 9

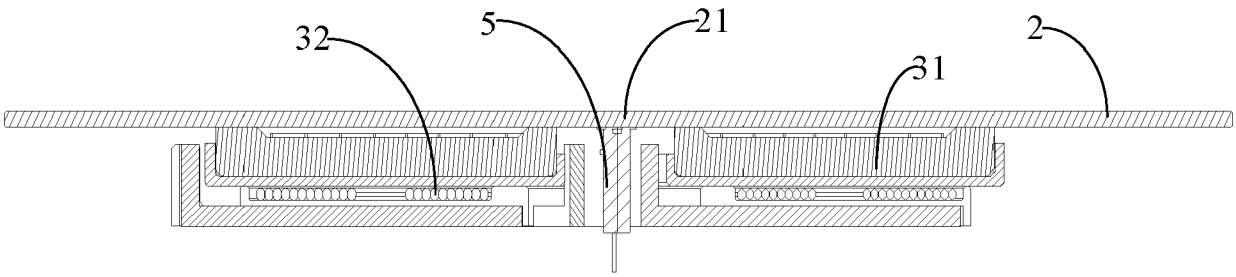

FIG. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 24 16 6933

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	CN 219 087 344 U (FOSHAN SHUNDE MIDEA ELECTRICAL HEATING APPLIANCES MFG CO LTD) 26 May 2023 (2023-05-26) * figure 1 *	1-15	INV. H05B1/02 H05B6/06
A	CN 208 029 138 U (FOSHAN SHUNDE MIDEA ELECTRICAL HEATING APPLIANCES MFG CO LTD) 30 October 2018 (2018-10-30) * figures 1-2 *	1-15	
A	CN 1 809 229 A (TOKYO SHIBAURA ELECTRIC CO [JP]) 26 July 2006 (2006-07-26) * figures 1,2 *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

H05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 September 2024	Pierron, Christophe

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 16 6933

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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10-09-2024

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82